



(1 of 2)

PTO/SB/08A (10-01)

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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Substitute for form 1449A/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet 1 of 3

Complete if Known

Application Number	09/678,110
Filing Date	October 2, 2000
First Named Inventor	Louis B. Rosenberg
Art Unit	2675
Examiner Name	Alecia Diane Nelson
Attorney Docket Number	IMMR070/01US

U.S. PATENT DOCUMENTS

Examiner	Cite No. ¹	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
A19	A1	6,422,941		7/23/2002	Thorner et al.	
	A2	6,160,489		12/12/2000	Perry et al.	
	A3	6,111,577		8/29/2000	Zilles et al.	
	A4	5,690,582		11/25/1997	Ulrich et al.	
	A5	5,575,761		11/19/1996	Hajianpour	
	A6	5,437,607		8/1/1995	Taylor	
	A7	5,436,622		7/25/1995	Gutman et al.	
	A8	5,283,970		2/8/1994	Aigner	
	A9	5,186,695		2/16/1993	Mangseth et al.	
	A10	5,175,459		12/29/1992	Daniel et al.	
	A11	5,165,897		11/24/1992	Johnson	
	A12	5,022,384		6/11/1991	Freels	
	A13	4,885,565		12/5/1989	Embach	
	A14	4,484,191		11/20/1984	Vavra	
	A15	4,464,117		8/7/1984	Foerst	
	A16	4,333,070		6/1/1982	Barnes	
	A17	4,262,549		4/21/1981	Schwellenbach	
	A18	4,127,752		11/28/1978	Lowthorp	
	A19	2,972,140		2/14/1961	Hirsch	

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Examiner Initials*	Cite No. ¹	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code ³	Number ⁴	Kind Code ⁵ (if known)			
A19	B1	JP	H2-185278		7/19/1990	Taito Corporation	
	B2	JP	H4-8381		1/13/1992	Epoch Co. and Key- Planning Co.	
	B3	JP	H7-24147		1/27/1995	Sega Corporation	
	B4	JP	H5-192449		8/3/1993	Taito Corporation	

Examiner
SignatureDate
Considered

3/2/05

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Kind Codes of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet **2** of **3**

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An Unit	2675
Examiner Name	Alecia Diane Nelson
Attorney Docket Number	IMMR070/01US

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OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

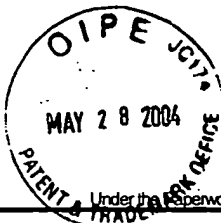
Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	C1	PATRICK, "Design, Construction, and Testing of a Fingertip Tactile Display for Interaction with Virtual and Remote Environments," <i>Master of Science Thesis</i> , MIT, Aug. 1990, archived Nov. 8, 1990.
	C2	CALDER, "Design of A Force-Feedback Touch-Introducing Actuator For Teleoperator Robot Control," <i>Bachelor of Science Thesis</i> , MIT, May 1983, archived June 23, 1983.
	C3	WIKER, "Teletouch Display Development: Phase 1 Report," <i>Technical Report 1230</i> , Naval Ocean Systems Center, San Diego, July 1988.
	C4	BLISS, "Optical-to-Tactile Image Conversion for the Blind," <i>IEEE Transactions on Man-Machine Systems</i> , Vol. MMS-11, No. 1, March 1970.
	C5	JOHNSON, "Shape-Memory Alloy Tactile Feedback Actuator," <i>Armstrong Aerospace Medical Research Laboratory</i> , AAMRL-TR-90-039, August, 1990.
	C6	KONTARINIS et al., "Tactile Display of Vibratory Information in Teleoperation and Virtual Environments," <i>PRESENCE</i> , 4(4):387-402, Harvard Univ., 1995.
	C7	AUKSTAKALNIS et al., "Silicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992.
	C8	EBERHARDT et al., "Inducing Dynamic Haptic Perception by The Hand: System Description and Some Results," <i>DSC-Vol. 55-1, Dynamic Systems and Control: Volume 1</i> , ASME 1994.
	C9	GOBEL et al., "Tactile Feedback Applied to Computer Mice," <i>International Journal of Human-Computer Interaction</i> , Vol. 7, No. 1, pp. 1-24, 1995.
	C10	PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 nd Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.
	C11	"Cyberman Technical Specification," <i>Logitech Cyberman SWIFT Supplement to Logitech Mouse Technical Reference and Programming Guide</i> , 4/5/1994.
	C12	OUHYOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and Its Use in the Virtual Reality Environment," <i>Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95</i> , Seoul, Korea, 21-24 August 1995.
	C13	KACZMAREK et al., "Tactile Displays," <i>Virtual Environment Technologies</i> , Chap. 9, pp. 349-414.
	C14	LAKE, "Cyberman from Logitech," at http://www.ibiblio.org/GameBytes/issue21/greviews/cyberman.html , 1994.
	C15	"Component Maintenance Manual With Illustrated Parts List, Coaxial Control Shaker Part No. C-25502," Safe Flight Instrument Corporation, Revised 28 January 2002 (3 pages).

Examiner Signature		Date Considered	3/24/05
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 3 of 3

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Filing Date	October 2, 2000
First Named Inventor	Louis B. Rosenberg
Art Unit	2675
Examiner Name	Alecia Diane Nelson
Attorney Docket Number	IMMR070/01US

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
DAN	C16	"Technical Manual Overhaul Instructions With Parts Breakdown, Coaxial Control Shaker Part No. C-25502," Safe Flight Instrument Corporation, Revised 15 July 1980 (23 pages).
	C17	SCANNELL, "Taking a Joystick Ride," <i>Computer Currents</i> , Boston Edition, Vol. 9, No. 11, November 1994
	C18	YAMAKITA et al., "Tele-Virtual Reality of Dynamic Mechanical Model," <i>Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems</i> , Raleigh, NC, July 7-10, 1992
	C19	NOLL, "Man-Machine Tactile," <i>SID Journal</i> , July/August 1972 Issue.
	C20	ROSENBERG, "Virtual Fixtures: Perceptual Overlays Enhance Operator Performance In Telepresence Tasks," <i>Ph.D. Dissertation</i> , Stanford University, June 1994.

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Form 1449 (Modified)

Information Disclosure
Statement By Applicant

(Use Several Sheets if Necessary)

Atty Docket No.:

IMM1P044A

Application No.:

09/678,110

Applicant:

Rosenberg et al.

Filing Date:

10/2/01

Group:

2675

U.S. Patent Documents

Examiner Initial	Patent No.	Date	Patentee	Class	Sub- Class	Filing Date
<i>Duplicate</i>	* 3,919,691	11/11/75	Noll	340	172.5	5/26/71
<i>submitted</i>	* 4,050,265	9/27/77	Drehnen et al.	64	11	8/3/76
<i>12/10/01</i>	* 4,131,033	12/26/78	Wright et al.	74	553	2/18/77
	* 4,477,043	10/16/84	Repperger	244	223	12/15/82
	* 4,560,983	12/24/85	Williams	340	825	9/17/82
	4,692,756	9/8/87	Clark	340	709	7/5/84
	* 4,706,294	11/10/87	Ouchida	381	109	6/10/86
	* 4,712,101	12/8/87	Culver	340	710	12/4/84
	* 4,782,327	11/1/88	Kley et al.	340	365	1/2/85
	* 4,795,296	1/3/89	Jau	414	5	11/17/86
	* 4,800,721	1/31/89	Cemenska et al.	60	393	2/13/87
	* 4,823,634	4/25/89	Culver	74	471	11/3/87
	* 4,868,549	9/19/89	Affinito et al.	340	710	5/18/87
	* 4,935,728	6/19/90	Kley	340	709	11/20/87
	* 4,943,866	7/24/90	Barker et al.	358	335	6/16/89
	* 4,964,004	10/16/90	Barker	360	14.1	6/16/89
	* 4,979,050	12/18/90	Westland et al.	360	14.1	12/2/83
	* 4,983,901	1/8/91	Lehmer	318	685	4/21/89
	* 5,007,300	4/16/91	Siva	74	471	1/22/90
	* 5,044,956	9/3/91	Behensky et al.	434	45	1/12/89
	* 5,095,303	3/10/92	Clark et al.	345	164	
	* 5,107,080	4/21/92	Rosen	200	6	12/1/89
	* 5,138,154	8/11/92	Hotelling	250	231.12	4/4/90
	* 5,139,261	8/18/92	Openiano	273	148	9/18/91
	* 5,146,566	9/8/92	Hollis, Jr. et al.	395	275	5/29/91
	* 5,185,561	2/9/93	Good et al.	318	432	7/23/91
	* 5,186,629	2/16/93	Rohen	434	114	8/22/91
	* 5,189,355	2/23/93	Larkins et al.	318	685	4/10/92
	* 5,193,963	3/16/93	McAfee et al.	414	5	10/31/90
	* 5,204,600	4/20/93	Kahkoska	318	602	2/6/91

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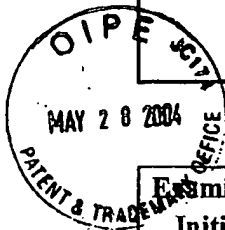
Michael J. Nelson

Date Considered:

3/21/05

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified) Information Disclosure Statement By Applicant <i>(Use Several Sheets if Necessary)</i>	Atty Docket No.: IMM1P044A	Application No.: 09/678,110
	Applicant: Rosenberg et al.	
	Filing Date: 10/2/01	Group: 2675



U.S. Patent Documents

Examiner Initial	Patent No.	Date	Patentee	Class	Sub-Class	Filing Date
<i>Duplicator submitted 12/10/01</i>	* 5,220,260	6/15/93	Schuler	318	561	10/24/91
	* 5,223,776	6/29/93	Radke et al.	318	568.1	12/31/90
	* 5,235,868	8/17/93	Culver	74	471	10/2/91
	5,237,327	8/17/93	Saitoh et al.	341	176	11/14/91
	* 5,254,919	10/19/93	Bridges et al.	318	560	3/22/91
	* 5,280,276	1/18/94	Kwok	345	167	7/10/92
	* 5,296,846	3/22/94	Ledley	345	161	10/5/92
	* 5,296,871	3/22/94	Paley	345	163	7/27/92
	* 5,313,230	5/17/94	Venolia et al.	345	163	7/24/92
	* 5,317,336	5/31/94	Hall	345	164	1/23/92
	* 5,355,148	10/11/94	Anderson	345	166	1/14/93
	* 5,374,942	12/20/94	Gilligan et al.	345	157	8/12/93
	* 5,381,080	1/10/95	Schnell et al.	318	566	2/18/93
	* 5,389,865	2/14/95	Jacobus et al.	318	568.11	12/2/92
	* 5,396,266	3/7/95	Brimhall	345	161	6/8/93
	* 5,398,044	3/14/95	Hill	345	145	12/7/93
	* 5,405,152	4/11/95	Katanics et al.	273	438	6/8/93
	* 5,414,337	5/9/95	Schuler	318	561	6/11/93
	* 5,457,479	10/10/95	Cheng	345	163	6/13/94
	* 5,473,344	12/5/95	Bacon et al.	345	163	
	* 5,477,237	12/19/95	Parks	345	156	7/14/94
	* 5,491,477	2/13/96	Clark et al.	341	20	9/13/93
	* 5,513,100	4/30/96	Parker et al.	364	167.01	6/10/93
	* 5,530,455	6/25/96	Gillick et al.	345	163	8/10/94
	* 5,541,379	7/30/96	Kim	200	566	1/18/95
	* 5,542,672	8/6/96	Meredith	463	37	3/17/95
	* 5,543,821	8/6/96	Marchis et al.	345	167	7/20/94
	* 5,576,727	11/19/96	Rosenberg et al.	345	179	6/5/95
	* 5,589,828	12/31/96	Armstrong	341	20	3/5/92
✓	* 5,589,854	12/31/96	Tsai	345	161	6/22/95

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Examiner: <i>William D. Ben</i>	Date Considered: <i>3/21/05</i>
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Form 1449 (Modified)

Information Disclosure
Statement By Applicant

(Use Several Sheets if Necessary)

Atty Docket No.:

IMM1P044A

Application No.:

09/678,110

Applicant:

Rosenberg et al.

Filing Date:

10/2/01

Group:

2675

U.S. Patent Documents

Examiner Initial	Patent No.	Date	Patentee	Class	Sub- Class	Filing Date
<i>Duplicate submitted 12/10/01</i>	* 5,591,082	1/7/97	Jensen et al.	463	38	1/5/95
	* 5,623,582	4/22/97	Rosenberg	395	99	7/14/94
	* 5,625,576	4/29/97	Massie et al.	364	578	10/1/93
	* 5,627,531	5/6/97	Posso et al.	341	22	9/30/94
	* 5,642,469	6/24/97	Hannaford et al.	395	99	11/3/94
	* 5,643,087	7/1/97	Marcus et al.	463	38	7/29/94
	* 5,656,901	8/12/97	Kurita	318	436	4/21/95
	* 5,666,138	9/9/97	Culver	345	161	11/22/94
	* 5,666,473	9/9/97	Wallace	345	420	10/8/92
	* 5,691,747	11/25/97	Amano	345	167	12/19/94
	* 5,691,898	11/25/97	Rosenberg et al.	364	190	3/28/96
	5,696,537	12/9/97	Solhjell	345	164	6/20/91
	* 5,709,219	1/20/98	Chen et al.	128	782	8/1/96
	* 5,712,725	1/28/98	Faltermeier et al.	345	164	
	* 5,714,978	2/3/98	Yamanaka et al.	345	157	12/5/95
	* 5,721,566	2/24/98	Rosenberg et al.	345	161	6/9/95
	* 5,724,068	3/3/98	Sanchez et al.	345	161	9/7/95
	* 5,724,106	3/3/98	Autry et al.	345	734	
	* 5,734,373	3/31/98	Rosenberg et al.	345	161	12/1/95
	* 5,736,978	4/7/98	Hasser et al.	345	173	5/26/95
	* 5,742,278	4/21/98	Chen et al.	345	156	11/1/95
	* 5,745,057	4/28/98	Sasaki et al.	341	35	9/24/96
	* 5,749,577	5/12/98	Couch et al.	273	148	5/31/95
	* 5,754,023	5/19/98	Rosten et al.	318	561	10/22/96
	* 5,755,577	5/26/98	Gillio	434	262	7/11/96
	* 5,760,764	6/2/98	Martinelli	345	160	12/13/95
	* 5,767,839	6/16/98	Rosenberg	345	161	3/3/95
	* 5,781,172	7/14/98	Engel et al.	345	164	
	* 5,787,152	7/28/98	Freadman	379	88.01	
✓	* 5,790,108	8/4/98	Salcudean et al.	345	184	10/23/92

Examiner:

William J. Nelson

Date Considered:

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Form 1449 (Modified) Information Disclosure Statement By Applicant <i>(Use Several Sheets if Necessary)</i>	Atty Docket No.: IMM1P044A	Application No.: 09/678,110
	Applicant: Rosenberg et al.	
	Filing Date: 10/2/01	Group: 2675

U.S. Patent Documents

Examiner Initial	Patent No.	Date	Patentee	Class	Sub-Class	Filing Date
<i>Duplications submitted 12/10/01</i>	* 5,805,140	9/8/98	Rosenberg et al.	345	161	11/17/95
	* 5,808,568	9/15/98	Wu	341	20	
	* 5,808,603	9/15/98	Chen	345	157	2/6/97
	5,821,921	10/13/98	Osborn et al.	345	157	8/9/96
	* 5,823,876	10/20/98	Unbehand	463	37	5/3/96
	* 5,825,308	10/20/98	Rosenberg	341	20	11/26/96
	* 5,831,408	11/3/98	Jacobus et al.	318	568.11	5/12/97
	5,831,593	11/3/98	Rutledge	345	156	1/16/96
	* 5,841,428	11/24/98	Jaeger et al.	345	184	9/20/96
	* 5,889,506	3/30/99	Lopresti et al.	345	158	10/25/96
	* 5,889,670	3/30/99	Schuler et al.	364	186	1/11/96
	5,897,437	4/27/99	Nishiura et al.	463	47	10/8/96
	* 5,912,661	6/15/99	Siddiqui	345	166	
	5,914,705	6/22/99	Johnson et al.	345	163	2/9/96
	* 5,944,151	8/31/99	Jakobs et al.	188	267.1	7/9/96
	5,956,016	9/21/99	Kuenzner et al.	345	156	3/19/97
	* 5,959,613	9/28/99	Rosenberg	345	161	11/13/96
	5,973,670	10/26/99	Barber et al.	345	157	12/31/96
	* 5,990,869	11/23/99	Kubica et al.	345	163	2/19/97
	6,001,014	12/14/99	Ogata et al.	463	37	9/30/97
	6,088,017	7/11/00	Tremblay et al.	345	156	4/24/98
	6,100,874	8/8/00	Schena et al.	345	157	6/24/97
	6,154,201	11/28/00	Levin et al.	345	184	10/26/98
	6,166,723	12/26/00	Schena et al.	345	184	11/7/97
	6,184,868	2/6/01	Shahoian et al.	345	161	9/17/98
	6,225,976	5/1/01	Yates et al.	345	156	10/30/98
	6,256,011	7/3/01	Culver	345	157	12/1/98
	6,300,938	10/9/01	Culver	345	156	4/12/99

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Examiner: <i>William D. Nelson</i>	Date Considered: 3/21/05
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Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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Examiner: <i>[Signature]</i>	Date Considered: <i>3/21/05</i>
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Pg. 5 of 7

Form 1449 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)	Atty Docket No.: IMM1P044A	Application No.: 09/678,110
	Applicant: Rosenberg et al.	
	Filing Date: 10/2/01	Group: 2675

Other Documents

Examiner Initial	Author, Title, Date, Place (e.g. Journal) of Publication
<i>Supplemental</i>	* Akamatsu et al., "Multimodal Mouse: A Mouse-Type Device with Tactile & Force Display," 1994, Presence, Vol. 3, pg. 73-80.
<i>Submitted</i>	* Ellis et al., "Design & Evaluation of a High-Performance Prototype Planar Haptic Interface," 1993, ASME, Vol. 49, pg. 55-64.
<i>12/10/01</i>	* Munch et al., "Intelligent Control for Haptic Displays," 1996, Eurographics, Vol. 15. No. 3, pg. C-217-C-226.
	* Ramstein, "Combining Haptic & Braille Technologies: Design Issues & Pilot Study, 4/11/96, ACM Conf. On Asst. Tech., pg. 37-44
	* Payette et al., Evaluation of a Force Feedback (Haptic) Computer Pointing Device in Zero Gravity, 10/17/96, ASME Dynamic Systems, Vol. 58, pg. 547-553
	* Su et al., The Virtual Panel Architecture: A 3D Gesture Framework, 1993, University of Maryland, pg. 387-393
	* Batter et al., "Grove 1: A Computer Display to the Sense of Feel," 1971, IFIP Congress, pg. 759-763.
	* Hayward et al., "Design & Multi-Objective Optimization of a Linkage for a Haptic Interface," 1994, Advances in Robot Kinematics, pg. 359-368.
	* Kelley et al., "MagicMouse: Tactile and Kinesthetic Feedback in the Human-Computer Interface using an Electromagnetically Actuated Input/Out Device," 1993, University of Brit. Col., pg. 1-27.
	* Wiker et al., "Development of Tactile Mice for Blind Access to Computers", 1991, Proceedings of Human Factors Society, pgs. 708-712.
	* Hannaford et al., "Force Feedback Cursor Control," 1989, NASA Tech Brief, Vol. 13, pg. 1-4.
	* Buttolo et al., "Pen-Based Force Display for Precision Manipulation in Virtual Environments," 1995, IEEE, pgs. 217-224.
	* Adachi et al., "Sensory Evaluation of Virtual Haptic Push-Buttons," 1994, Technical Research Center, Suzuki Motor Corp., pgs. 1-8.
	* Gotow et al., "Perception of Mechanical Properties at the Man-Machine Interface," 1987, IEEE, pgs. 688-689.
	* Schmult et al., "Application Areas for a Force-Feedback Joystick," 1993, Advances in Robotics, Mechatronics, and Haptic Interfaces, Vol. 49, pgs. 47-54.
	* Adelstein et al., "Design and Implementation of a Force Reflecting Manipulandum for Manual Control Research," 1992, NASA Ames Research Center, pgs. 1-25.
	* Atkinson et al., "Computing with Feeling, Computing & Graphics," Vol. 2, 1977, pg. 97-103.
	* Millman et al., "Design of a Four Degree-of-Freedom Force-Reflecting Manipulandum with a Specified Force/Torque Workspace," 1991, IEEE CH2969-4, pgs. 1488-1492.
	* Howe et al., "Task Performance with a Dextrous Teleoperated Hand System," 1992, SPIE, Vol. 1833, pgs. 1-9.
<i>✓</i>	* Russo, "The Design and Implementation of a Three Degree-of-Freedom Force Output Joystick," Dept. of Mech. Engineering, 1990, pgs. 8-42.

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Examiner: <i>William Nelson</i>	Date Considered: <i>3/21/05</i>
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Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

